## REMARKS

Claims 1–38 are pending in the application.

Claims 1–38 have been rejected.

Reconsideration of the claims is respectfully requested.

I. REJECTION UNDER 35 U.S.C. § 102

Claims 1–38 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,327,565 to *Kuhn et al.* The rejection is respectfully traversed.

A claim is anticipated only if each and every element is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. MPEP § 2131 at p. 2100-70 (8th ed. rev. 1 February 2003).

As previously noted, independent claims 1, 7–9, 24 and 35 each recite that the hybrid speech model is a weighted combination of speech models from the plurality of speech models. Similarly, independent claims 21 and 36 each recite that the modified version of at least one speech model is generated using a predefined weighting constraint. As taught in the specification, the hybrid model is derived from the existing group of speech models using a weight vector assigning weights to each respective speech model within the group. Specification, page 20, line 18 through page 21, line 13. Such a feature is not found in the cited reference. *Kuhn et al* describes training a new speaker-dependent model by constructing a supervector from a linear combination of eigenvoices and estimating the linear combination of

model coefficients (e.g., HMM parameters) that will comprise an adapted model for the new speaker. *Kuhn et al*, column 5, lines 27–57. *However,* Kuhn et al is silent as to weighting combinations of eigenvoices or model coefficients.

The Office Action notes the use of coefficients in *Kuhn*:

> The speaker dependent model 44 serves to estimate the linear combination of coefficients that will comprise the adapted model for that new speaker. Thus in step 50 a new set of HMMs is constructed based on supervector 48 to generate the adapted model 52.

*Kuhn*, column 5, lines 50-54. The Office Action asserts that such linear combination of coefficients comprises "weighting" of the models as recited in the claims:

> Kuhn asserts (col. 5, lns. 50-53) that the speaker dependent model serves to estimate the linear combination of coefficients (weighted combination) that will comprise the adapted model (hybrid speech model).

Paper No. 10, page 19. However, as taught in the specification, linear combinations are NOT necessary weighted combinations:

> The hybrid speech model is a combination of speech models of the model group 102 on the basis of the input signal derived from the spoken utterance received [from] an input 100. The speech models in the model group define a space indicative of the possible values that a hybrid speech model assocaited to a given speech element may take on. Preferably, the combination of speech models of the speech model group is such that the hybrid speech model is weighted toward the speaker specific speech model defined by the input signal received at the input 100.
>
> In a specific example of implementation, the hybrid speech model is derived by computing a linear combination of the speech models in the model group 102. The linear combination is characterized by a set of parameters indicative of weights associated to speech models in the model group 102. The combination is effected by selecting a set of weights that minimizes the difference between the linear combination of speech models from the model group and the signal received at input 100 as well as constraining the hybrid model to lie within the space defined by the speech models in the model group.

Specification, page 14, line 14 through page 15, line 4. Linear combinations could, for example, be simple "binary" combinations in which a given model is merely included or excluded, without weighting of each particular model–that is, inclusion of a specific model indicated by a logical "1" while exclusion is indicated by a logical "0",such as [0, 1, 1, 0 . . .], versus a set of weights having values between 0 and 1, such as [0.2, 0.0, 0.7, 0.3 . . .]. Accordingly, the mere teaching of linear combination of models is not sufficient to establish anticipation of weighting such linear combinations.

Independent claims 9 and 29 each recite first and second types of speech models, where the first type of speech model is employed to generate a hybrid speech model based on the spoken utterance and the second type of speech model is employed to generate a complex speech model from the hybrid model. Such a feature is not found in the cited reference. *Kuhn* teaches only adaptation of a single type of speech model to produce the speaker dependent model. In addition, *Kuhn* teaches forming only one speaker dependent model, through either single or iterative adaptation. The supervector 48 referenced in the Office Action is merely a representation of the speaker dependent model, not a separate speaker dependent model itself:

> The speaker dependent model trained on this new speaker will usually be very inadequate for recognition, at least at first. However, the model may nevertheless be used to construct a supervector. The supervector is constructed at step 46 such that the supervector (supervector 48) is constrained to fall within the eigenvoice space 38 previously created from the training speakers. Supervector 48 is constructed with the imposed constraint that the HMM model used for recognition must be a linear combination of the eigenvoices comprising eigenvoice space 38.
>
> The speaker dependent model 44 serves to estimate the linear combination of coefficients that will comprise the adapted model for that new speaker. Thus in step 50 a new set of HMMs is constructed based on supervector 48 to generate the adapted model 52. If desired, an optional iterative process may be performed

> at 54 to construct a new supervector from the adapted model 52 and thereafter to construct another set of HMMs from which a further adapted model may be constructed.

*Kuhn*, column 5, lines 40–58. Only a single speaker dependent model is formed in *Kuhn*, from a single type of models, not two separate hybrid and complex models as claimed, from distinct model types.

Claims 10 and 30 each recite that the second type of model has a higher complexity that the first type of speech model. Such a feature is not found in the cited reference.

Claims 16 and 34 each recite that substantially the same weights as are employed to derive the hybrid speech model are also employed to derive a complex speech model based on the hybrid speech model. Such a feature is not found in the cited reference.

Accordingly, the Applicant respectfully requests the Examiner withdraw the § 102(e) rejection of Claims 1–38.

## II. CONCLUSION

As a result of the foregoing, the Applicant asserts that the remaining Claims in the Application are in condition for allowance, and respectfully requests an early allowance of such Claims.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at ***dvenglarik@davismunck.com***.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Davis Munck Deposit Account No. 50-0208.

Respectfully submitted,

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